

WHAT IS CLAIMED IS:

1. A fluid machine for a system having an engine comprising:
a waste heat collecting cycle for collecting waste heat from
the engine and having an expansion device for generating rotational
driving force from the collected waste heat; and

an engine accessory operatively connected to the engine and
driven by a driving force from the engine, wherein

a rotating shaft is commonly used as shafts for the expansion
device and the engine accessory, and

the expansion device is an expansion device for changing its
expansion volume.

2. A fluid machine according to Claim 1, further comprising:
an ON-OFF control valve at an upstream side of the expansion
device.

3. A fluid machine for a system having an engine comprising:
a waste heat collecting cycle for collecting waste heat from
the engine and having an expansion device for generating rotational
driving force from the collected waste heat;

a pulley operatively connected to the engine and driven by
a rotational driving force of the engine;

a compressor device constituting a refrigerating cycle; and

a rotating shaft commonly used as shafts for the expansion
device, the pulley and the compressor device.

4. A fluid machine according to Claim 3, further comprising:

a cylindrical seal provided between the expansion device and the compressor device.

5. A fluid machine according to Claim 3, further comprising:
a hot gas bypass passage for supplying refrigerant gas from the compressor device to an evaporator of the refrigerating cycle.

6. A fluid machine according to one of Claims 1 and 3, wherein the expansion device is a scroll type expansion device in which a movable scroll is rotated with an orbit motion to a fixed scroll.

7. A fluid machine according to Claim 6, further comprising:
a crank mechanism disposed between the shaft and the expansion device to vary a radius of the orbit motion of the movable scroll by the rotational driving force from the expansion device.

8. A fluid machine according to Claim 1, wherein
the engine accessory is an alternator for generating electric power when operated by the rotational driving force from at least one of the engine and the expansion device.

9. A fluid machine according to Claim 8, wherein
the alternator is disposed between the pulley and the expansion device.

10. A fluid machine for an automotive vehicle having an internal combustion engine comprising:

a pulley operatively connected to the engine and rotationally driven by a rotational driving force from the engine;

a waste heat collecting cycle for collecting waste heat from the engine and having an expansion device for generating rotational driving force from the collected waste heat;

a compressor device constituting a refrigerating cycle and operatively connected to the pulley and driven by the driving force from the engine over the pulley; and

a rotating shaft commonly used as shafts for the pulley, the expansion device and the compressor device,

wherein the expansion device is an expansion device for changing its expansion volume.

11. A fluid machine for an automotive vehicle having an internal combustion engine comprising:

a waste heat collecting cycle for collecting waste heat from the engine and having an expansion device for generating rotational driving force from the collected waste heat;

an electric rotating machine selectively operating as an electric generating device and as an electric motor;

a compressor device constituting a refrigerating cycle and operatively connected to the expansion device and the electric rotating machine and driven by the driving force from at least one of the expansion device and the electric rotating machine; and

a rotating shaft commonly used as shafts for the expansion device, the electric rotating machine and the compressor device.

12. A fluid machine for an automotive vehicle having an internal combustion engine comprising:

a pulley operatively connected to the engine and rotationally driven by a rotational driving force from the engine;

a waste heat collecting cycle for collecting waste heat from the engine and having an expansion device for generating rotational driving force from the collected waste heat;

a compressor device constituting a refrigerating cycle and operatively connected to the pulley and driven by the driving force from the engine over the pulley;

a hot gas bypass passage connecting the outlet side of the compressor side to an inlet side of an evaporator of the refrigerating cycle;

a valve means provided in the hot gas bypass passage for selectively opening and closing the bypass passage; and

a rotating shaft commonly used as shafts for the pulley, the expansion device and the compressor device.

13. A fluid machine for an automotive vehicle having an internal combustion engine comprising:

a pulley operatively connected to the engine and rotationally driven by a rotational driving force from the engine;

a waste heat collecting cycle for collecting waste heat from the engine and having an expansion device for generating rotational driving force from the collected waste heat;

an alternator for generating electric power and operatively connected to the pulley and the expansion device so that the alternator is driven by the driving force from at least one of the engine and the expansion device; and

a rotating shaft commonly used as shafts for the pulley, the alternator and the expansion device.